

REMARKS

Claims 22 and 32 are amended. Claims 1-12 and 22-35, as amended, remain in the application. No new matter is added by the amendments to the claims.

The Rejections:

In the Office Action dated August 9, 2006, the Examiner rejected Claims 22 and 32 under 35 U.S.C. 103(a) as being unpatentable over JP-11267560 in view of Bihn (4,712,739) and Gengenbach et al (US 2,930,350)

As to Claim 22, the Examiner stated that JP '560 discloses (see English translated Detailed Description of the Invention, Abstract and Figs 8 and 11) a painting apparatus comprising an outer arm for a painting robot; an outer arm (6) for painting robot having a housing, a color changer (11) outside the housing (see Fig 11), the color changer (11) adapted to be connected to a paint supply; a paint canister (97) mounted inside the housing (see paragraph 51 and Fig 11) and a paint transfer line continuously connecting (see Fig 8) the color changer (11) to an interior of the paint canister for transferring paint from the color changer (11) to the interior of the paint canister (29, 97) and capable of providing electrostatic isolating of the paint canister from the color changer during use of the paint canister for painting. The Examiner commented that JP '560 lacks teaching an outer arm for a painting robot formed of a non-conductive material and the type of paint or application system. The Examiner stated that Bihn teaches an electrostatic or a non-electrostatic painting apparatus mounted on an industrial robot (see column 2, lines 31-35), and one in the art would include an electrostatic spray device in JP '560's system to enhance atomization of the painting solution. The Examiner further stated that Gengenbach discloses (see Figs 1 and 4; column 2, lines 55-63) in an electrostatic spray arrangement a housing (7) of the outer arm (see Fig 4) formed of a non-conductive material, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an outer arm being formed of a non-conductive material in JP '560 to prevent electric hazards or to properly insulate the electric spray installation. With respect to the paint type used in JP '560 as modified, The Examiner stated that it is capable of being electrically conductive paint.

With respect to Claim 32, the Examiner stated that JP '560 discloses a painting apparatus comprising an outer arm (6) for a painting robot; a paint canister (29) mounted on the arm (6), a color changer (11) mounted on the painting robot adapted to be connected to a paint supply (13) and a paint transfer line (19) continuously connecting the color changer (11) to an interior of the paint canister for transferring paint from the color changer (11) to the interior of the paint canister (29) and capable of providing electrostatic isolating of the paint canister from the color changer during use of the paint canister for painting. The Examiner commented that JP '560 lacks teaching an outer arm for a painting robot formed of a non-conductive material. The Examiner stated that Bihm teaches an electrostatic or a non-electrostatic painting apparatus mounted on an industrial robot (see column 2, lines 31-35), and one in the art would include an electrostatic spray device in JP '560's system to enhance atomization of the painting solution. The Examiner stated that Gengenbach discloses (see Figs 1 and 4; column 2, lines 55-63) in an electrostatic spray arrangement a housing (7) of the outer arm (see Fig 4) formed of a non-conductive material, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an outer arm being formed of a non-conductive material in JP '560 to prevent electric hazards or to properly insulate the electric spray installation. With respect to the paint type used in JP '560 as modified, the Examiner stated that it is capable of being electrically conductive paint.

The Examiner rejected Claims 26-28 under 35 U.S.C. 103(a) as being unpatentable over JP '560 in view of JP 11-114873, Bihm and Gengenbach.

As to Claims 26-27, the Examiner stated that JP '560 discloses a painting apparatus comprising an arm for a painting robot; an outer end (6); a paint canister (97) mounted inside the housing (see paragraph 51 and Fig 11); a wrist (7) having one end (7a) attached to the outer end of the arm; and a wrist (7b) having an opposite end for mounting a paint applicator (8). The Examiner commented that JP '560 lacks teaching structural components of the wrist as well as the arm having a housing formed of a non-conductive material. The Examiner stated that, however, JP '873 discloses (see English translated Abstract and Fig 3) structural components (item 50 and insulating washers 31 and 32) of the wrist (wrist flange 20) formed of a non-conductive material, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include structural components of the wrist formed of a non-conductive

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material in JP '560 to electrically insulate the robot with less load. The Examiner stated that Bihm teaches an electrostatic or a non-electrostatic painting apparatus mounted on an industrial robot (see column 2, lines 31-35), and one in the art would include an electrostatic spray device in JP '560 device to enhance atomization of the painting solution. The Examiner further stated that Gengenbach discloses (see Figs 1 and 4; column 2, lines 55-63) in an electrostatic spray arrangement a housing (7) of the outer arm (see Fig 4) formed of a non-conductive material, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an outer arm being formed of a non-conductive material in JP '560 to prevent electric hazards or to properly insulate the electric spray installation.

With respect to Claim 28, the Examiner stated that JP '560 discloses a paint transfer line continuously connecting (see Fig 8) the color changer (11) to an interior of the paint canister for transferring paint from the color changer (11) to the interior of the paint canister (29, 97) and capable of providing electrostatic isolating of the paint canister from the color changer during use of the paint canister for painting.

As to Claim 30, the Examiner stated that in Fig. 11, the color changer is mounted outside the arm housing.

The Examiner rejected Claims 23 and 33 under 35 U.S.C. 103(a) as being unpatentable over JP '560 in view of Bihm and Gengenbach and/or JP '873, and further in view of Bab (US 5,127,831). The Examiner commented that although JP '560 as modified teaches an arm formed of a non-conductive material, an arm formed of a polyamide material is not taught. However, the Examiner stated that it is well known in the art to interchangeably use PVC or polyamide material to attain similar flexible characteristics (see Bab, column 3, lines 6-10), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the arm of a polyamide material in JP '560 as modified since it is well known and convention to alternatively use polyamide as semi-flexible material.

The Examiner rejected Claims 24 and 34 under 35 U.S.C. 103(a) as being unpatentable over JP '560 in view of Bihm and Gengenbach and/or JP '873, and further in view of Plummer (US 4,884,752). The Examiner commented that JP '560 lacks teaching a paint transfer line formed of an electrically insulating material. The Examiner stated that, however, Plummer discloses a paint transfer line (32, 53) formed of electrically insulating material (see Fig 1 and 00013281500091814282-1

column 3, lines 44-49), and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a paint transfer line formed of electrically insulative material in JP '560 to achieve voltage isolation in selectively applying electrically conductive paint as taught by Plummer (see column 1, lines 12-16).

The Examiner rejected Claims 25, 31 and 35 under 35 U.S.C. 103(a) as being unpatentable over JP '560 in view of Bihm and Gengenbach and/or JP '873, and further in view of Klein et al (US 2001/0013315). The Examiner commented that JP '560 lacks teaching a pig removably inserted in the paint transfer line and being slidingly moveable in the paint transfer line. The Examiner stated that Klein discloses (see Fig 1 and paragraphs 32 and 37) a pig (32) removably inserted in the paint transfer line and being slidingly moveable in the paint transfer line, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a pig movable as claimed in JP '560 to introduce only the quantity of paint which is required overall as taught by Klein et al (see paragraph 9).

Applicants' Response:

Applicants appreciate the allowance of Claims 1-12.

All of the Examiner's rejections are based upon JP '560. Claims 22-25 and 27-35 recite a paint canister mounted inside the robot arm housing or on the robot outer arm. As Applicants pointed out in the previous response, JP '560 fails to show or suggest a paint canister.

The Examiner stated that JP' 560 discloses "a paint canister (97) mounted inside the housing (see paragraph 51 and Fig 11)". Paragraph 51 describes a "coating control-of-flow pump 97". Fig. 11 simply shows a small box 97 which clearly is not a pain canister. The element 97 is identified with the schematic symbol for a pump Fig. 12. Nowhere in the JP '560 description and drawings is the pump 97 identified as a "paint canister".

In order to clarify the difference between Applicants' claimed invention and JP '560, Applicants amended Claims 22 and 32 to recite that the paint canister is "for storing an amount of paint sufficient for a painting operation". See Applicants' specification from Page 12 at Line 15 through Page 13 at Line 20. Applicants' paint canister 47 is filled with an amount of paint which paint is then dispensed from the canister during the painting operation.

The Examiner further stated that JP '560 discloses "a paint transfer line continuously connecting (see Fig 8) the color changer (11) to an interior of the paint canister for transferring paint from the color changer (11) to the interior of the paint canister (29, 97) and capable of providing electrostatic isolating of the paint canister from the color changer during use of the paint canister for painting." In this statement, the Examiner identified the coating pump 29 and the coating control-of-flow pump 97 as the claimed paint canister. In his rejection of Claim 32, the Examiner identified the coating pump 29 as the claimed paint canister.

The JP '560 coating pump 29 is shown in Figs. 1, 2 and 10 as a small box mounted on the outside of the robot arm whereas Applicants' Claim 22 recites "a paint canister mounted inside said housing". Fig. 8 of JP '560 shows the coating pump 29 as a rectangular box connected to an air operation bulb 60. JP '560 also identifies the coating pump 29 as a gear pump. (Paragraph 24) Clearly, the coating pump 29 is not the claimed "paint canister for storing an amount of paint sufficient for a painting operation".

Claims 22 and 32 recite "a paint transfer line continuously connecting said color changer to an interior of said paint canister for transferring paint from said color changer to said interior of said paint canister and providing electrostatic isolation of said paint canister from said color changer during use of said paint canister for painting with electrically conductive paint." The Examiner identified Fig. 8 of JP '560 as showing such a paint transfer line capable of providing electrostatic isolation of the paint canister from the color changer during use of the paint canister for painting with electrically conductive paint. However, the Examiner has failed to cite any support in JP '560 that the line (supply tube 19) connected between the recoloring bulb unit 11 and the coating pump 29 provides electrostatic isolation. In fact, there is no statement in JP '560 that the painting robot can be used with electrically conductive paint.

The Examiner has stated that the limitation listed in item 3 of the previous response that the paint transfer line used "for transferring paint from the color changer to... and providing..." is an intended use of the apparatus, which is capable of being performed using the JP '560 device. The Examiner further stated that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus shows all of the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987) 0001328150009\814282-1

Furthermore, "expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666,667 (Bd. App. 1969). Thus, the "inclusion of material or article worked upon does not impart patentability to the claims." *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 (USPQ 458, 459 (CCPA 1963)).

The Examiner has incorrectly characterized the limitation as an intended use limitation. Electrostatic isolation is a physical property of the paint transfer line, and does not recite the manner in which a claimed apparatus is intended to be employed, is not an expression relating the apparatus to contents thereof during an intended operation, nor does it include material or an article worked upon.

Claim 26 recites a housing formed of a non-conductive material and a wrist attached to the arm with structural components of the wrist made of non-conductive material. The wrist 37 has one end attached to the outer end of the robot arm 35 and an opposite end for mounting a paint applicator 17. The Examiner stated that JP '873 discloses (see English translated Abstract and Fig 3) structural components (item 50 and insulating washers 31 and 32) of the wrist (wrist flange 20) formed of a non-conductive material, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include structural components of the wrist formed of a non-conductive material in JP '560 to electrically insulate the robot with less load.

The wrist flange 20 provides a mechanical interface between the robot 10 and electrical equipment such as spot welding and arc welding torch. JP '873 does not show a wrist. A robot wrist provides articulation such as the axes of rotation 38, 39 of Applicants' wrist 37. JP '873 shows a flange 20 that is bolted to the end of the robot arm 10 to prevent relative movement. The insulating unit 30 is separate from and is not a structural component of the flange 20. The structural integrity of the flange 20 would be the same with or without the insulating unit 30.

The component 50 is not described in the translated Abstract, but it appears to be a variation of the insulating unit 30 and separate from and not a structural component of the flange 20. The Examiner characterized the components 31 and 32 as "insulating washers". The washers 31 and 32 are not described in the translated Abstract and they appear to be made of a different material than the insulating unit 30. Thus, there is no teaching that the washers 31 and

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32 are insulating and they clearly are not a structural component of the flange 20 since the structural integrity of the flange would be the same with or without the washers.

In summary, the JP '560 reference does not show or suggest the following elements recited in Applicants' independent Claims 22, 26 and 32:

1. a painting robot arm having a housing formed of a non-conductive material (Claims 22, 26 and 32).
2. a paint canister (Claims 22 and 32).
3. a paint transfer line continuously connecting the color changer to an interior of the paint canister for transferring paint from the color changer to the interior of the paint canister and providing electrostatic isolation of the paint canister from the color changer during use of the paint canister for painting with electrically conductive paint (Claims 22 and 32).
4. a wrist having one end attached to the outer end of the arm, structural components of the wrist being formed of a non-conductive material (Claim 26).

Bihn, Gengenbach, JP '873, Bab, Plummer and Klein do not provide the missing elements.

In view of the amendments to the claims and the above arguments, Applicants believe that the claims of record now define patentable subject matter over the art of record. Accordingly, an early Notice of Allowance is respectfully requested.

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